Complete Summary

GUIDELINE TITLE

Thromboembolism in pregnancy.

BIBLIOGRAPHIC SOURCE(S)

American College of Obstetricians and Gynecologists (ACOG). Thromboembolism in pregnancy. Washington (DC): American College of Obstetricians and Gynecologists (ACOG); 2000 Aug. 10 p. (ACOG practice bulletin; no. 19). [73 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Thromboembolism in pregnancy. Washington (DC): American College of Obstetricians and Gynecologists (ACOG); 1997 Mar. (ACOG educational bulletin number 234).

COMPLETE SUMMARY CONTENT

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SCOPE

DISEASE/CONDITION(S)

Venous thromboembolism during pregnancy, including deep vein thrombosis (DVT) and pulmonary embolism (PE)

GUIDELINE CATEGORY

Management
Prevention

Risk Assessment
Treatment

CLINICAL SPECIALTY

Family Practice
Internal Medicine
Obstetrics and Gynecology
Pulmonary Medicine

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To aid practitioners in making decisions about appropriate obstetric and gynecologic care
- To review the current literature on the prevention and management of thromboembolism in obstetric patients, discuss the data behind sometimes conflicting guidelines from expert panels, and offer evidence-based recommendations to address the most clinically relevant issues in the management of these patients

TARGET POPULATION

Pregnant women at risk of venous thromboembolism

INTERVENTIONS AND PRACTICES CONSIDERED

1. Thromboprophylactic anticoagulant therapy, including heparin, low-molecular-weight heparin, and warfarin (for postpartum prophylaxis only)
2. Testing for inherited or acquired thrombophilias in women with a history of thrombosis or a family history of thrombosis, including:
    - Lupus anticoagulant
    - Anticardiolipin antibodies
    - Factor V Leiden mutation
    - Prothrombin G20210A mutation
    - AT-III antigen activity levels
    - Fasting homocysteine levels or the methylenetetrahydrofolate reductase (MTHFR) mutation
    - Protein C antigen activity levels
    - Protein S antigen activity levels (free and total)
3. Testing for deep vein thrombosis (DVT) and pulmonary embolism (PE)

MAJOR OUTCOMES CONSIDERED

- Effectiveness of thromboprophylaxis for preventing venous thromboembolism
- Prophylactic-related maternal and neonatal morbidity and mortality

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The MEDLINE database, the Cochrane Library, and the American College of Obstetricians and Gynecologists' (ACOG's) own internal resources were used to conduct a literature search to locate relevant articles published between January 1985 and March 1998. Priority was given to articles reporting results of original research, although review articles and commentaries also were consulted. Abstracts of research presented at symposia and scientific conferences were not considered adequate for inclusion in this document.

Guidelines published by organizations or institutions such as the National Institutes of Health and the American College of Obstetricians and Gynecologists were reviewed, and additional studies were located by reviewing bibliographies of identified articles.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Studies were reviewed and evaluated for quality according to the method outlined by the U.S. Preventive Services Task Force.

I Evidence obtained from at least one properly designed randomized controlled trial

II-1 Evidence obtained from well-designed controlled trials without randomization

II-2 Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one center or research group

II-3 Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments also could be regarded as this type of evidence.

III Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Analysis of available evidence was given priority in formulating recommendations. When reliable research was not available, expert opinions from obstetrician-gynecologists were used. See also the "Rating Scheme for the Strength of Recommendations" field regarding Grade C recommendations.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Based on the highest level of evidence found in the data, recommendations are provided and graded according to the following categories:

Level A - Recommendations are based on good and consistent scientific evidence.

Level B - Recommendations are based on limited or inconsistent scientific evidence.

Level C - Recommendations are based primarily on consensus and expert opinion.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Practice Bulletins are validated by two internal clinical review panels composed of practicing obstetrician-gynecologists generalists and sub-specialists. The final

guidelines are also reviewed and approved by the American College of Obstetricians and Gynecologists (ACOG) Executive Board.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The grades of evidence (I-III) and levels of recommendations (A-C) are defined at the end of "Major Recommendations."

The following recommendations are based primarily on consensus and expert opinion (Level C):

- Pregnant patients with a history of isolated venous thrombosis directly related to a transient, highly thrombogenic event (orthopedic trauma, complicated surgery) in whom an underlying thrombophilia has been excluded may be offered heparin prophylaxis or no prophylaxis during the antepartum period. However, they should be counseled that their risk of thromboembolism is likely to be higher than the normal population. Prophylactic warfarin should be offered for 6 weeks postpartum.
- Pregnant patients with a history of idiopathic thrombosis, thrombosis related to pregnancy or oral contraceptive use, or a history of thrombosis accompanied by an underlying thrombophilia other than homozygous for the factor V Leiden mutation, heterozygous for both the factor V Leiden and the prothrombin G20210A mutation, or antithrombin-III (AT-III) deficiency should be offered antepartum and postpartum low-dose heparin prophylaxis.
- Patients without a history of thrombosis but who have an underlying thrombophilia and have a strong family history of thrombosis also are candidates for antepartum and postpartum prophylaxis. At the minimum, postpartum prophylaxis should be offered.
- Pregnant patients with a history of life-threatening thrombosis, with recent thrombosis, with recurrent thrombosis, receiving chronic anticoagulation, or patients with thrombosis found to be AT-III deficient, homozygous for the factor V Leiden mutation or prothrombin G20210A mutation, heterozygous for both the factor V Leiden and the prothrombin G20210A mutation should be given adjusted-dose heparin every 8 hours to maintain the activated partial thromboplastin time (APTT) at least 1.5 times control throughout the dosing interval. Low-molecular-weight heparin (LMWH) administered twice daily also is an alternative.
- Patients at risk for thrombosis should receive warfarin postpartum for 6 weeks to achieve an international normalized ration (INR) of approximately 2.0 to 3.0. Heparin should be given immediately postpartum with warfarin for at least 5 days until the INR is therapeutic.
- Patients with antiphospholipid syndrome and a history of thrombosis require adjusted-dose prophylactic anticoagulation.
- Patients who are candidates for either prophylactic or therapeutic heparin may be given enoxaparin or dalteparin during pregnancy. However, because of the lack of data regarding adequate dosing during pregnancy, antifactor Xa levels may be monitored.
- The safety of epidural anesthesia with twice-daily dosing of LMWH is of concern and should be withheld until 24 hours after the last injection.

- Epidural anesthesia appears to be safe in women taking unfractionated low-dose heparin if the APTT is normal.

Definitions:

Grades of Evidence

I Evidence obtained from at least one properly designed randomized controlled trial

II-1 Evidence obtained from well-designed controlled trials without randomization

II-2 Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one center or research group

II-3 Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments also could be regarded as this type of evidence.

III Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees

Levels of Recommendations

Level A - Recommendations are based on good and consistent scientific evidence.

Level B - Recommendations are based on limited or inconsistent scientific evidence.

Level C - Recommendations are based primarily on consensus and expert opinion.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate use of anticoagulant therapy to prevent venous thromboembolism in pregnant women

POTENTIAL HARMS

- The major concerns with heparin use during pregnancy are not fetal but maternal and include heparin-induced osteoporosis and heparin-induced thrombocytopenia (HIT). Bleeding is also an issue.
- Warfarin derivatives cross the placenta. A skeletal embryopathy resulting in stippled epiphyses and nasal and limb hypoplasia can occur when warfarin is given between 6 and 12 weeks of gestation. Midtrimester exposure may result in optic atrophy, microcephaly, and developmental delay. Bleeding can occur in the fetus at any time, resulting in a high fetal loss rate.

CONTRAINDICATIONS

CONTRAINDICATIONS

Warfarin derivatives cross the placenta and in most cases are relatively contraindicated in pregnancy

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

These guidelines should not be construed as dictating an exclusive course of treatment or procedure. Variations in practice may be warranted based on the needs of the individual patient, resources, and limitations unique to the institution or type of practice.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2000 Aug

GUIDELINE DEVELOPER(S)

American College of Obstetricians and Gynecologists - Medical Specialty Society

SOURCE(S) OF FUNDING

American College of Obstetricians and Gynecologists (ACOG)

GUIDELINE COMMITTEE

American College of Obstetricians and Gynecologists (ACOG) Committee on Practice Bulletins-Obstetrics

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Not stated

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

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GUIDELINE AVAILABILITY

Electronic copies: Not available at this time.

Print copies: Available for purchase from the American College of Obstetricians and Gynecologists (ACOG) Distribution Center, PO Box 4500, Kearneysville, WV 25430-4500; telephone, 800-762-2264, ext. 192; e-mail: sales@acog.org. The ACOG Bookstore is available online at the ACOG Web site.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on September 14, 2004. The information was verified by the guideline developer on December 8, 2004.

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